



Weapon System Open Experimental Platform Breakout Sessions

**Dave Sharp
Dick Buchness
Wendy Roll**

Experimentation Team Leaders

**Mike Effinger, CMU
Ed Pla, Honeywell
Mark Schulte, Vanderbilt**

Joe Hoffert, *Instrumentation Interface*

Approved for Public Release, Distribution Unlimited



Breakout Session Agenda



Wednesday 24 July 2002

Session #1: Interfaces

- **Instrumentation**

- Introduction of Object Viewing & Analysis Tool for Integrated Object Networks (OVATION) product

- Relationship To Analysis Interface

- **OEP Configuration Interface**

- **ACL / Model Editor - Front End Interfaces**

3:15 - 5:00

Thursday 25 July 2002

Session #2: Future Directions

- **Challenge Problems**

- Product Scenario requirement descriptions

- Logical and physical modeling

- Tool integration

- Bi-directional integration of modeling and analysis

- Use of Integration Interface

- **Experimentation Team Breakout**

3:45 - 5:30



Session #1

Wednesday 24 July 2002



Instrumentation Interface

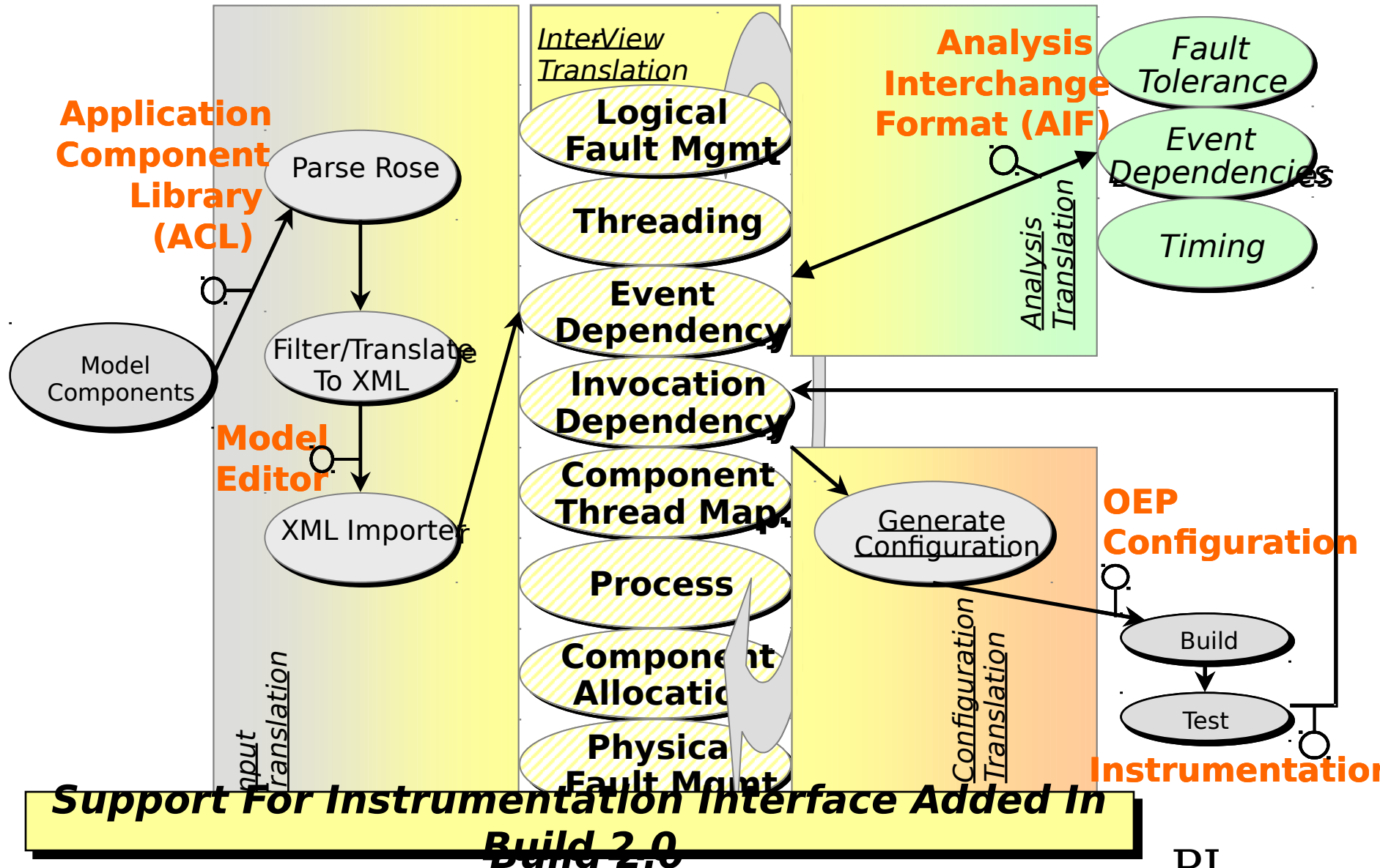


Instrumentation Interface Overview



- **Context**
- **Motivation**
- **Description**
- **Future Functionality**
- **Sample Instrumentation Interchange
Format (IIF) File**
- **Documentation**

Tool Integration Interfaces





Motivation



- **Capture Timing Information From Running System And Leverage For Future Modeling & Analysis Activities**
 - Reduce reliance on testing to achieve required performance
 - Reduce number of iterations and time for each
- **Instrumentation Interface Captures Information Associated With “Raw Time Traces”**
 - No worst case timing data derivation, etc



OEP Configuration Interface



OEP Configuration Interface Plans



- **Interface To Be**

- **Abstracted to remove OEP configuration specifics**
 - **Passes, etc**
 - **Used as meta-code generation flexibility experiment**
 - **Phase I researchers requested to capture metrics associated with required modifications**
 - **Meta-model will be provided with this update**
- **Extended to support reverse engineering**
 - **Supports creation of models from running systems**
- **Extended to include new tags**
 - **Infrastructure configuration**
 - **Fault modes**
 - **Others**



Session #2

Future Directions



Increased Breadth



- **Continue Working on Unaddressed MoBIES Challenge Problem Requirements**
 - **View integration**
 - All...
 - **Fault management**
 - Honeywell mentioned recent work here
 - Michigan
 - CMU
 - VU
 - SoHaR
 - SwRI
 - **Event analysis**
 - CMU
 - Michigan
 - **Product line reuse support**
 - Internal component configurability in Build 2.0
 - CMU



Increased Depth



- **Refer Back To Challenge Problem Presentation At Jan 2001 PI Meeting On Logical And Physical Modeling**

***Underlying Concept Is Perhaps Multi-Level Modeling-
Levels Cut Across Established Views***



Increased Depth (cont)



• Increased Separation of System Requirements and Design

1.1.1.1 Requirements

Functionally, the system must update navigation displays with timely airframe position information using inputs from navigation sensors. Concurrently, there is also a device that captures the pilot's cursor position that is a point of interest for weapon release. When the position of the cursor updates, the position on the tactical display must be updated.

Following sections describe specific requirements associated with both inputs and outputs for this product scenario.

1.1.1.1.1 **Input Requirements**

The system shall request new inputs from the GPS subsystem at a

The system shall poll an input cursor representing a potential weapon release at a 20 Hz rate.

1.1.1.2 **Output Requirements**

The system shall update the display outputs with new aircraft position information at a 40 Hz rate. The latency between associated inputs and this output shall be less than a single 40 Hz frame.

**capture these
explicitly in models
- constraints on
valid
configurations**

**retain separately
from configuration
design**

**Requirements Form "Top Level"
Model**



Increased Depth (cont)

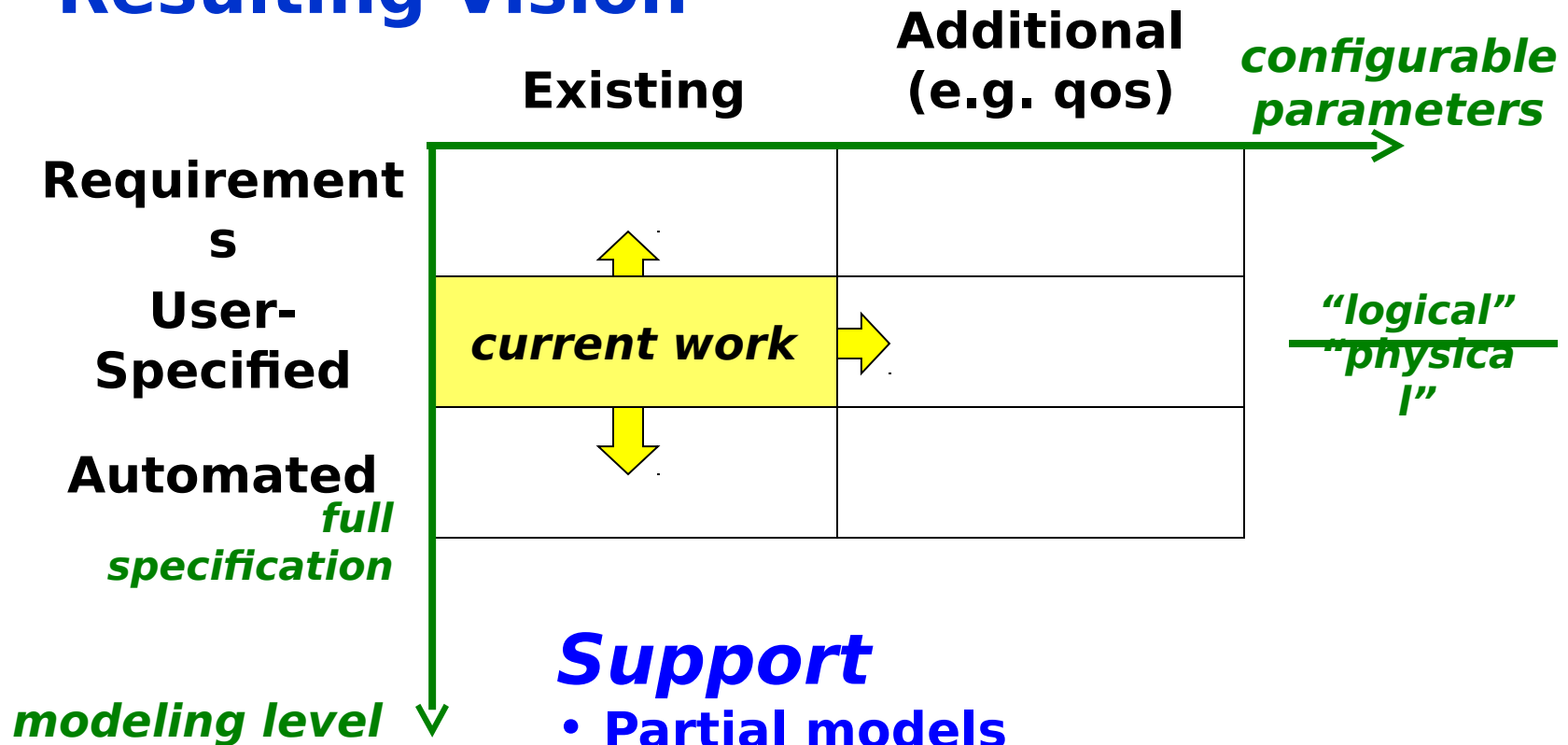


- **Increased Automation of System Configuration**
 - **Mentioned by Vanderbilt**

Existing Challenge Problem Example— Component Allocation Modeling:

[MCA02] Automate or aid decisions associated with mapping logical system views to the physical deployment of components. For example, automated creation of Distributed Proxy components for supplier component situations where supplier and consumer components in the logical view are placed on different processors.

• Resulting Vision



Support

- Partial models
- Specification of different levels by different users in different organizations at different times
- Separate CM of different levels

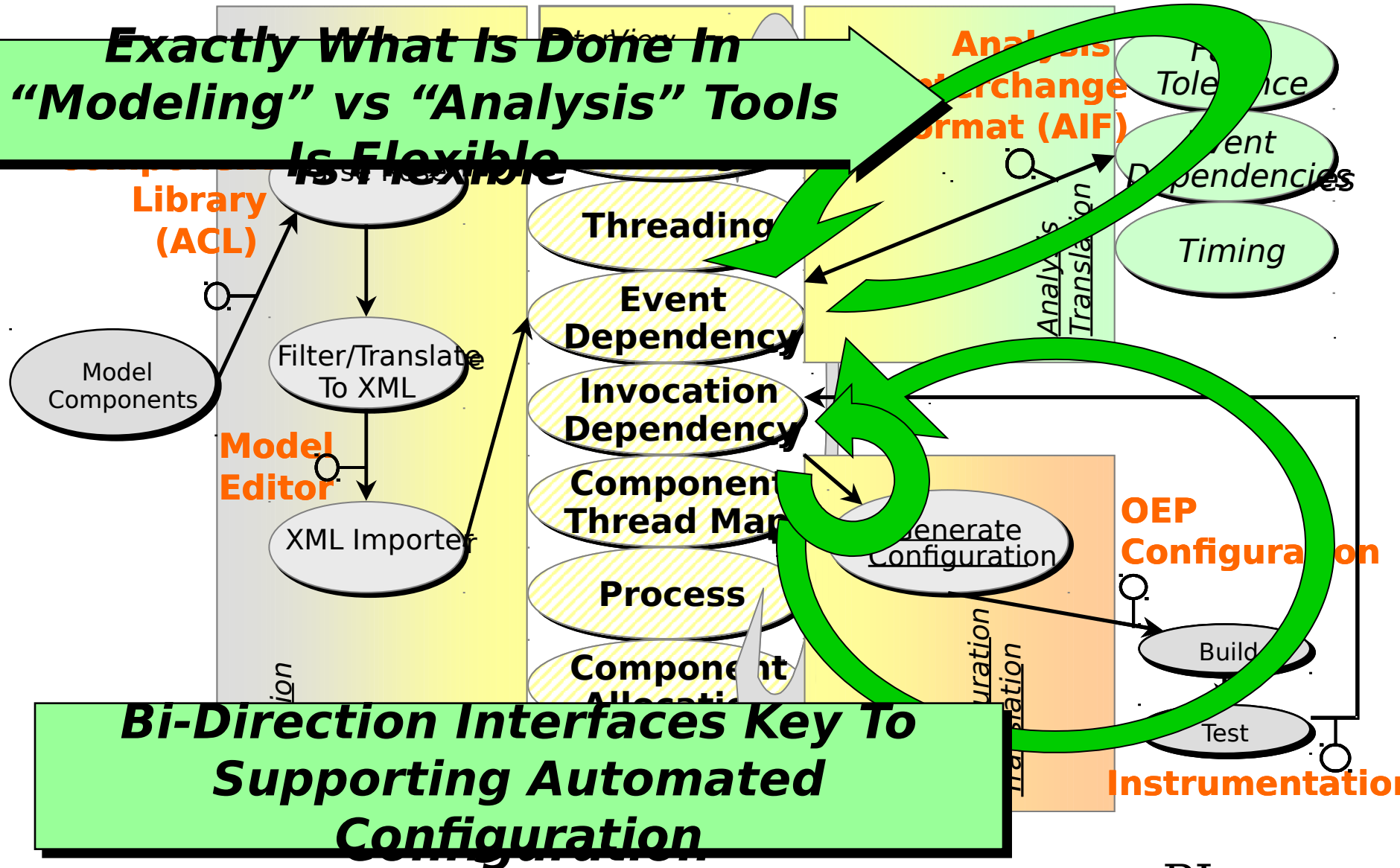


Increased Depth (cont)



- **User Requirement or Design Specifications Act As Constraints on Automated Configuration of Remaining Attributes**
 - **Closely related to Vanderbilt DESERT work**
- **Plan for MoBIES Is To Include Specification of Requirements As Constraints on Certain Components**
 - **Simplify problem by not requiring separate requirements model**

**Exactly What Is Done In
“Modeling” vs “Analysis” Tools
Is Flexible**



**Bi-Direction Interfaces Key To
Supporting Automated
Configuration**